Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



For no. 15 - USDA from 0.23.
See 100
H313P

ANIMAL HUSBANDRY DIVISION HAWAII AGRICULTURAL EXPERIMENT STATION RAPY HONOLULU, HAWAII

RECEIVE

Under the joint supervision of the MAY 8 1937

UNIVERSITY OF HAWAII and the UNITED STATES DEPARTMENT OF AGRICULTURE

U. S. Department of Agriculture

Progress Notes on Experiments and Other Items of Interest

No. 14

May, 1936

These progress notes on experimental work and other items of interest to livestock men in the Territory are issued from time to time by the Animal Husbandry Division. You are invited to suggest other lines of research that you deem important and to submit inquiries to the University.

> A GENERAL REPORT OF THE ANIMAL HUSBANDRY DIVISION OF THE HAWAII AGRICULTURAL EXFERIMENT STATION FOR THE FISCAL YEAR ENDING JUNE 30, 1935

> > by

L. A. Henke and G. W. H. Goo

Introduction

This issue of the Progress Notes in place of giving the detailed results of some definite experiment presents general information about the University dairy and piggery such as production of individual animals, feed costs, health records, etc. A brief account of the experimental work of the year is also presented.

MOSTER MANAGER LEGISLANDS TRANSPORT TRANSPORT

not be accommon total and union

THE PROPERTY OF STREET, AND ST

the said the state of the strations of said service.

100, 1000

compacts to post, made the stor instructives no later service on it as no section in a content of the section of section

THE STATE OF LINE STATES AND A STATE OF THE PARTY OF THE

de de l'enke and de Ne Ne Con

and second

DAIRY CATTLE

By G.W.H. Goo

At the close of the fiscal year the University herd consisted of 43 Holsteins and 11 Guernseys. During the fiscal year 5 Holstein heifers and one Guernsey heifer were registered.

Thirty-three different cows were milked, producing 213,360 pounds of milk. Seven cows were in the herd part of the year, leaving an average production of 7,246 pounds for the 26 full-year cows. Segregated as to breeds, 20 full-year Holstein cows averaged 7,698 pounds and 6 full-year Guernseys averaged 5,740 pounds.

During the year, two female calves were sold as breeders. Seventeen Holstein and Guernsey calves were sold as veal. One heifer could not be bred and was sold.

The details of milk production, butter fat production, feed cost per cow, total milk production cost, etc. are given in the following pages.

DATE OF THE PERSON

All the close of the fileed, your the Materials of the courtest of the courtes

to themes of the same was and to true man area of all area area some and all a called the grant of the grant of the same area of the same of the

During We geer, the femile enter cold or broaders. Seventeen school of the deal of the cold on the cold.

The defails of rate aredievies, butter, respective, feet one are seen as a first restorated and a rest are seen as a first restorated and a rest are a restorated as a restora

YEARLY PRODUCTION RECORDS OF COWS IN THE UNIVERSITY OF HAWAII HERD

JULY 1 TO JUNE 30

Breed	Guernsey	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein	Guernsev
Number	51	65	68	7.1	72	74	79	82	83	86
Tomo	77.	DeKol	T 100 100 100 100 100 100 100 100 100 10	Uniwai						
PATE PATE PATE PATE PATE PATE PATE PATE	To nan	FT.11.13	Uniwai	Netoria	Uniwai	Univai	Uniwai	Uni wa i	Uniwai	Alberta's
	Hawall Hawall	Pontiac	Manca	Mead	Seria	Luku Prilly	Princess	Segis	DeKol Samonatio	Floss
Donn	20 21 2	0 95 95	20 מר ר	0 02 0	200 1	20000	27000		or a good mo	
DOLL	0-10-60	カーなりーなり	7-74-60	Ø-00-00 0-00-00	2-8-40	7-40-40	2-0-27	5-19-27	4-24-27	9-8-27
Date										
first calf	9-30-25	10-31-27	6-14-28	5-14-28	8-8-28	8-26-28	7-9-29	6-7-29	6-19-29	3-23-30
1925-26	6293#									
1926-27	7826						Milety (** ca stor. sp. * management (milety ca.) and sp. milety ca.)			
1927-28	7902	#0069	422#	911#	A continue of the factor of th					mente anama para, menante an apera pipalantaka (maga
1928-29	7907	6298	6443	4155	5107#	4746#		#019	342#	
1929-30	8207	5971	6950	3978	6502	1302	2606#	5364	6332	1582#
1930-31	5463	7752	9798	5612	5678	7687	5469	5381	4389	3588
1931-32	5862	9078	9124	6772	5044	7843	6700	6857	3730	4559
1932-33	8724	8654	8603	3789	6157	6876	5602	7695	10042	3595
1933-34	6697	8770	8504	7226	7611	6229	8188	7500	8106	6052
1934-35	6279	7206	7209	6085	6192	8674	9497	6815	7314	6285
Full year							14			
Average	7207	7673	8090	5374	6197	6435	7091	6602	6652	4816

#
Part year only.

							-		
		A 778				1000			
	1				130				
	-						1000		
	1					SALVE S			1000
						- Annual Property of the Parket of the Parke			
	1000	10.33	PATE OF THE PATE O		The second				
					The state of the s			100000000000000000000000000000000000000	
101.									
				-	-				
							,		
									1
				The state of the	The state of the s	The state of			

YEARLY PRODUCTION RECORDS OF COWS IN THE UNIVERSITY OF HAWAII HERD

JULY 1 TO JUNE 30 - Continued.

Holstein	109	- C 221			Joletta	6-30-29	8-1-32	water and color of the color of	manument of pulls formand or that for full and the format of the company of the c	Value and the second se				6833#	7523	8725	8124
Holstein	108		ULLWAI	Sarcastic	Prilly	6-22-29	1-13-32	開催、自然の目的できたに、明、日間の 中心で、できるの で 数・でも見るのの 自然でも 国内ので、	men's entire destination of advantage over a state destination of the state of the	The state of the s			4123#	5271	5736	7806	6271
Holstein	105	Uniwai	Dany	Gem	Segis	1-21-29	9-21-32	and the control of th	The first and the first of the					6585#	6736	9311	8023
Holstein	104		ULLWAL	Pabst	Korndyke	1-8-29	7-20-31	inventionals device even regalitiques en regent des constructions de la construction de l	de deservatives et la fortune de deservatives de la décisir e, es un servicio de la deservative de la decisión de la deservativa della del				6212#	6791	9071	9269	7613
Guernsey	103	Island-	מביים	Alberta of	Hawaii Korndyke	12-28-28	1-28-33	stermings gal blumpfer, potables state to climate amagemen	And the first of the company of the					#6662	6084	5625	5855
Guernsey	101			Islander	Lady	9-20-28	7-3-31	race and do representational financial participation of the contract of the co	market demonstrate and the second sec				6463#	5960	7040	6877	6323
Holstein	66			Uniwai	Sarcastic	7-27-28	12-11-30	alle de la company de la compa	a de a de			3957#	6933	7495	7096	8749	7568
Guernsey	96		,	Islander's	Lu1u	3-24-28	11-27-30	entre de la companya	maraja en estado		-	3317#	3394	4769	7178	4584	4981
Holstein	92	- 17	CHIMAI	Prilly	Korndyke	11-22-27	6-7-30	et repelle à vites dami comples de la financia del la financia de	Andrew Address of the control of the		541#	4696	6373	3285	6433	5964	5350
Guernsey	89		a a o T i	Boy's	Clementina	11-1-27	7-18-30				#809	5217	6525	5713	7368	4790	5923
Holstein	88		חודותם	DeKol	Pontiac	10-31-27	3-1-30			market applications of the first for a first or complete processing the first of th	#4562	6344	5938	9942	10356	10118	8540

#
Part year only.

								*
								:
								•
		6						
				:				
						:		
								Pr.
								,
				,				
						1		,
						•		
			. 100					
						,		
		1		;		,		
						-		1
							7	
								1
		*						
						3	1	
		1						
		1 1						
		3						
		2 1					,	
				4-5			-	
							1	7
					THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TW			3
							4	
				-				
								1
116								
					1			
					SIFE !			
-17	7				10			

YEARLY PRODUCTION RECORDS OF COMS IN THE UNIVERSITY OF HAWAII HERD JULY 1 TO JUME 30 - Continued.

Jolstein	Holstein	Holstein	Holstein	Hols tein	Holstein	Holstein	Holstein	Holstein	Holstein	Holstein
	112	122	123	125	127	128	129	130	131	133
Uniwai	Uniwai	Uniwai	Uniwai	Univai	Unisai	Uniwai	Uniwai	Uniwai	Uniwai DeKol	Uniwai
Sarcastic	Princess		Sarcastic	Segis	Segis	Pontiac	Korndyke	Belle	Korndyke	Princess
Segis	Sarcastic	Pontiac	De.vol	Sarcastic	Pontiac	DeKol	Girl	Segis	Lass	Devol
12-15-29	3-20-30	3-10-31	5-4-31	9-4-31	2-8-32	6-1-32	8-27-32	9-3-32	9-6-32	12-17-32
7-29-32	12-17-32	1-9-34	2-18-34	2-25-34	8-20-34	12-10-34	12-30-34	1-4-35	3-21-35	6-23-35
	And the state of t		e englande de deplanation de descriptions (when the state of the state							
64.03#	4621#						Andrewski, best of the control of th			en en ek en eller ekste jamme sladde egilde k (en establika). Ken ekste kan ekste ken ekste kan ekste kan ekste ken ekste kan ekste ken ekste ken ekste ken ekste ken ekste k
3836	7347	3013#	3623#	3387#						
10213	9299	7790	4231	5783	#0 9 29	5008#	4243#	3026#	3029#	165#
7005	の た で が	0644	4231	5783						
7025	8323	7790	4231	5783						

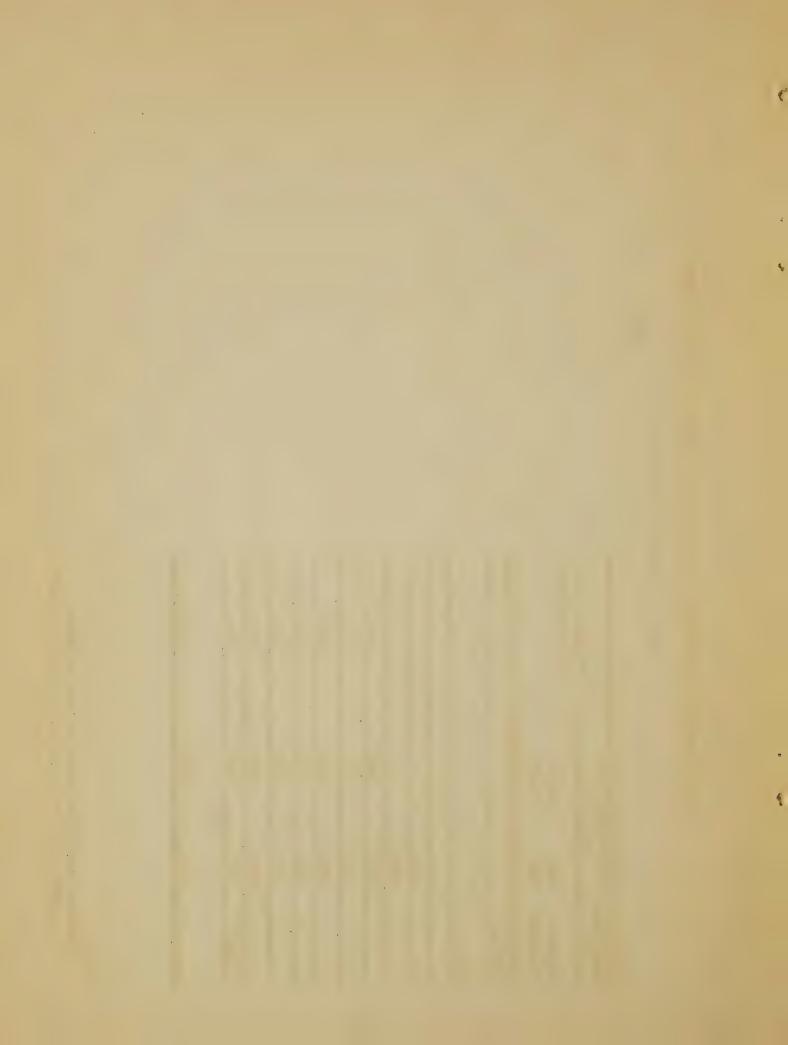
.

YEARLY PRODUCTION RECORDS OF COURS IN THE UNIVERSITY OF HAMAII HERD

JULY 1 TO JUNE 30 - Continued.

of all	r coms	e) Life deligheren delege en ministra					AND AND PROPERTY OF THE PROPER	emplificar (perior 2-ne d timp * equinciple date	engagin. (Interpretational content of the	editions -penaltenegath-infilmentanous	- estilations successful density delicements		
##Average of all	full year cows					6201	5576	5929	6315	6608	7247	7246	6706
•	Full Year Holsteins					5632	5200	6281.	6763	6937	7427	7598	6925
* ##Average Milk	full Year Guernseys			7826	7902	7907	8207	4756	5085	5752	6737	5740	6074
Holstein 134	Uniwai Pontiac Sarcastic	1-20-33	2-6-35									2342#	

Includes cows which were in herd at years indicated; some of which are no longer in herd.



BUTTER FAT PRODUCTION AND FEHD COST OF UNIVERSITY HERD

JULY 1, 1934 TO JUNE 30, 1935

		Date of	Pounds	Average		Feed Cost
No.	Breed	Birth	Fat	Percent Fat	Feed Cost	Per Qt. Milk
51	G	6-16-23	276.36	4.50	\$136.00	\$0.047
€5	H	9-25-25	262.80	3.68	154.77	0.046
68	H	1-14-26	266.37	3.72	135.88	4.041
71	H	2-23-26	222.37	3.63	147.24	0.052
72	H	5- 8-26	225.22	3.65	151.38	0.053
74	H	7-28-26	319.56	3.71	150.23	0.037
79	H	2- 6-27	362.35	3.84	164.56	0.037
82	H	3-19-27	273.73.	4.06	154.86	0.049
83	H	4-24-27	283.05	3.96	126.90	0.037
86	G	9- 8-27	319.21	5.15	146.69	0.050
88	H	10-31-27	339.89	3.42	182.84	0.039
89	G	11- 1-27	239.10	5.25	143.57	0.030
92	H	11-22-27	239.60	3.97	131.99	0.048
96	G	3-24-28	230.41	5.19	143.34	0.067
99	H	7-27-28	309.41	3.54	138.59	0.034
101	C _t	9-20-28	303.67	4.49	158.11	0.049
103	Cr	12-28-28	313.29	5.62	143.19	0.055
104	H	1- 8-29	248.37	3.59	121.31	0.03#
105	H	1-21-29	393.58	4.30	146.71	0.034
108	Н	6-22-29	286.11	3.74	133.83	0.037
109	Н	6-30-29	301.25	3.50	141.41	0.035
111	H	12-15-29	345.72	3.45	171.40	0.036
112	H	3-20-30	316.95		176.97	0.041
122	Н	3-10-31	278.87	3.66	168.31	0.046
123	H	5- 4-31	161.02	3.84	115.11	0.058
#124	H	8-19-31	opine move	man tree	39.96	on pa
125	H	9- 4-31	238.36	4.16	116.78	0.043
#,127	Н	2- 8-32	233.93	3.60	137.16	guip types
#128	H	6- 1-32	191.14	3.43	141.41	ton arts
#129	Н	8-27-32	139.78	3.30	133.22	en sp
#130	H	9- 3-32	103.72	3.43	116.10	epid finity
#131	H	9- 6-32	99.61	3.30	130.65	
132	H	12-11-32	and this	arr au	110.81	are app
#133	H	12-17-32	5.78	3.50	98.49	200 TVS
#134	H	1-20-33	82.23	3.50	111.40	quare tribute
135	H	3-29-33		was both	97.55	me tro
136	H	5- 4-33	short unique	rios sape	109.16	unio seeb
137	G	5- 8-33	6** Gra	OT 6 Hope	98.12	que que
138	H	10-21-33		way 600	92.92	way yalk
139	G	11-13-33	wis ree	97 64	94.47	con the
140	H	12-24-33	******	Notice strong	89.03	ross tests
141	H	1- 9-34	ene ada	aper lase	86.16	41-5 5000
142	H	3- 5-34	give gare	der one	85.67	gene vage
#143	H	11- 5-34		rane tope	126.09	MM (80)
·# ₁₄₄	H	12- 4-34	open same	and app	36.34	use are



No.	Breed	Date of Birth	Pounds Fat	Average Percent Fat	Feed Cost	Feed Cost Per Qt. Milk
11		allel on Epintolis tectury i _s requisitors remayor appropriate principal ex	THE TOTAL PROPERTY AND ADMINISTRATION SERVICE	and the place of the control of		
#145	Н	12-10-34	apro perip	W/RE span	\$118.57	many artis
#146	Н	2-25-35	~ ···	4 No. alpea	66.82	store state
#147	G.	4-17-35	am nos	evel sales	25.61	40.70
## _{UKPD}	HB	6- 9-27	pin 1000	non man	144.81	
CB	GB	1- 4-32	~~~~	MATE MANAGE	134.89	mode little-
PEM	HB	2-17-34	some from	book augus	136.67	made more
SME	HB	1-29-34	spine store	April Sillar	138.10	ener major
AD	GB	2-12-34	400 de \$	this gave	138.06	
###Average	(Hols	teins)	283.73	3.74	\$146.55	\$0.041
Average	e (Guer	nseys)	280.34	5.03	145.16	0.054

[#] Not full year animals.

^{##}Bull Initials.

^{###}Cows in herd during full year.



BRIEF ABSTRACTS AKEN FROM THE PROJECT FILES OF SOME INVESTIGATIONS CARRIED ON IN THE DAIRY DIVISION DURING 1934-1935

By L. A. Henke

Agglutination Abortion Tests

Thirteen tests have been made on the University of Hawaii Dairy Herd with the following results. These tests were made by the Veterinary Division of the Board of Agriculture and Forestry.

Date	Negative	Suspicious	Positive
February 4, 1930	20	0	2
May 5, 1930	40	0	11
September 9, 1930	34	9	10
December 15, 1930	40	3	0
March 11, 1931	39	3	8
August 28, 1931	40	2	7
January 13, 1932	38	10	0
May 24, 1932	37	3	6
August 20, 1932	49	2	5
December 14, 1932	51	2	2
June 1, 1933	31	13	5
November 8, 1933	33	8	О
October 27, 1934	39	1	0

Positive and suspicious animals are separated from the rest of the herd. While in general, succeeding tests on the same animal show the same reaction, this is not entirely true as the data above shows.

;

•

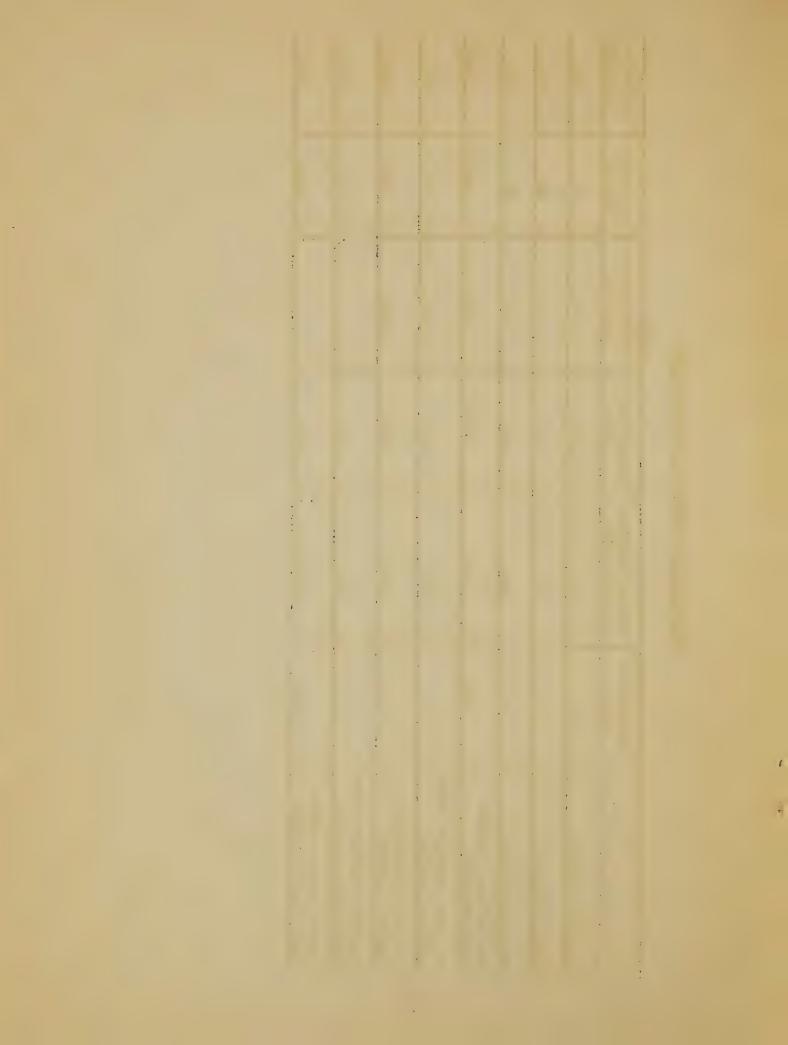
Percent Reproductive Efficiency of Dairy Herd

	Holsteins	Guernseys	Entire Herd
1929-30	76.1	68.6	74.2
1930-31	61.1	37.6	54.4
1931-32	71.2	75.5	72.3
1932-33	67.7	57.8	64.6
1933 -34	73.4	57.7	70.0
1934-35	86.1	94.4	87.6
6 year average	72.4	65.3	70.5



Bull Services Required Per Conception

	intonette's Duke	Uniwai Korndyke Pontiac DeKol	Clementina's Boy	Prince Elreka Watador	All bulls 1934-35	All bulls 1933-34
No. coms served	23	19	11	ಬ	34	40
Total services	2	5%	12	5	43	84
No. conceptions	٦	16	11	ව	33	26
No. services required per conception	2.0	1.5	1.09	7.0	1.30	5.23
No. cows pregnant after only one service	 -1	11	10	2	27	21
% cows pregnant after only one service	50.0	. 57.9	6*06	100.0	79.4	52.5
No. cows pregnant after two or less services	p	16	. 11		30	23
% cows pregnant after two or less services	50.0	84.2	100		97.1	57.5



Tuberculin Test

The entire herd was tuberculin tested on November 2, 1934 by the Veterinary Division of the Board of Agriculture and Forestry and no reactors were found.

Composition and Bacterial Content of the University Dairy Milk

Sample bottles selected at random by the milk inspectors and tested by the Food Commissioner and Analyst of the Board of Health showed the following:

Date	Sediment Rating	Fat %	Solids %	Bacteria Count
July 31, 1934	Clean	4.0	12.9	4,900
Sep. 14, 1934	Clean	4.2	13.4	57,000
Nov. 3, 1934	Clean	4.0	12.6	1,500
Nov. 30, 1934	Clean	4.3	13.1	2,500
Jan. 11, 1935	Clean	4.0	12.9	6,500
Mar. 21, 1935	F. Clean	4.1	12.8	7,400
Apr. 6, 1935	Clean	3.7	12.3	3,000
May 23, 1935	Clean	4.2	12.3	4,200

Pineapple Bran vs. Beet Pulp as Supplements to Grain Rations Fed to Dairy Cows

In a second fifteen week experiment with six cows, there was no significant difference in the body weight, fat content of the milk or quantity of milk produced when four pounds of pineapple bran were



substituted for four pounds of beet pulp, and there was a saving of 37.5 percent in the cost of these supplemental feeds when pineapple bran was substituted for beet pulp.

The results of this second experiment agreed very closely with those of the first experiment.

Value of a Cassava-Coconut Oil

Cake Meal Combination as Part of the Ration for Dairy Cows

In a twelve week experiment with six cows a mixture of 45 percent cassava meal, 10 percent coconut oil cake meal, $32\frac{1}{2}$ percent soybean oil cake meal, 10 percent wheat bran and 2.5 percent minerals was worth, based on the amount of milk produced, 94.7 percent as much as the University medium high protein mixture consisting of 48 percent wheat bran, 30 percent rolled barley, 20 percent soybean oil cake meal and 2 percent minerals.

Rations Using Maximum Amounts

of Pineapple Bran and Cane Molasses for Dairy Cows

In two twelve week experiments, each with six cows a mixture containing 44.5 percent pineapple bran and 17.8 percent cane molasses was compared with the medium high protein ration described above consisting largely of imported feeds.

Milk production was about 4 percent higher on the medium high protein feed but the cost of the concentrate feed used per unit quantity of milk produced was about 30 percent less when feeding the pineapple bran-molasses ration.

Both experiments gave similar results.

and the second s

Green Alfalfa vs. Green Sudan Grass for Dairy Cattle

In one twelve week experiment with six cows, green alfalfa did not prove superior to green sudan grass based on resulting milk production. The same concentrate ration was fed to both lots of cows which supplied enough protein when sudan grass was fed and materially more protein than was needed according to feeding standards when green alfalfa was fed.

Alfalfa was more palatable, the cows consuming a daily average of 81.4 pounds of green alfalfa and 76.5 pounds of green sudan.

Napier Grass Fed Whole vs.

Cut (ensilage cutter) Mapier Grass as a Roughage For Dairy Cows

In one twelve week experiment with eight cows, milk production was practically the same on whole as on cut Napier grass, in spite of the fact that consumption of the cut Napier grass was lower. The experiment needs to be repeated before drawing definite conclusions.

Green Napier Grass vs. Green Sudan Grass as Roughages for Dairy Cows

In two twelve week experiments, one with six and the other with eight cows, Mapier grass was slightly less palatable, average consumption for both experiments per cow per day being 63.6 pounds of green sudan and only 60.7 pounds of green Mapier grass. Milk production averaged 7 percent lower when the Mapier grass was fed. The same concentrate mixture was fed to each lot of cows.

SWINE

At the close of the fiscal year, 9 breeding hogs, (4 Berkshires and 5 Tamworths) and 27 smaller pigs were on the University Farm. All the breeding hogs were purebred and registered.

During the year 5 Tamworth boars, 5 Tamworth gilts, 2 Berkshire boars and 1 Berkshire gilt were sold to hog raisers as breeding animals.

Thirty-three hogs were sold to the meat market.

BRIEF ABSTRACTS TAKEN FROM THE PROJECT FILES

OF SOME INVESTIGATIONS CARRIED ON IN THE

SWINE DIVISION DURING 1934-35.

By L. A. Henke

Hog Cholera Protection

All hogs on the University Farm not previously protected against hog-cholera were given the serum-virus on October 16, 1934 and another group born since that date were vaccinated on February 25, 1935. These treatments were entirely for protection; no hog cholera was experienced during the year.

Value of Bananas for Fattening Swine

In a 113-day experiment with 8 hogs having an average initial weight of 66.5 pounds, bananas when constituting 25 percent of the concentrate mixture fed to hogs were worth 38.6 percent as much as the grain mixture which they in part replaced.

Value of Cassava Meal for Fattening Swine

In a 33-day test with six hogs having an initial weight of 80 pounds, a mixture consisting of 84.5 percent cassava meal and 15.5 percent soybean oil cake meal was worth 94.8 percent as much as barley for producing gains in hogs.

Sweet Potatoes for Fattening Swine

In a 112-day test with swine, raw sweet potatoes supplemented only with fish meal were unsatisfactory as a feed but when a limited quantity of the regular hog fattening ration (2 pounds per pig per day) were fed, sweet potatoes with hogs selling at 12 cents per pound were worth \$18 to \$30 per ton.

Pineapple Bran-Molasses Mixtures for Fattening Swine

In two experiments with hogs having an initial weight of about 68 pounds, a mixture including 50 percent pineapple bran and 20 percent cane molasses with protein supplements. Was compared with our standard fattening mixture consisting of 68 percent barley, 20 percent molasses and protein supplements.

Daily average gains on the standard ration were 1.49 pounds as compared with only 0.76 pounds on the pineapple bran-molasses ration. Feed costs per pound of gain were practically the same on the two rations. Pineapple bran in these tests was valued at \$14.00 and cane molasses at \$10.00 per ton. Daily feed consumption was much lower on the pineapple bran-molasses ration.

COOPERATIVE INVESTIGATIONS WITH RANCHERS AND PLANTATIONS

Pineapple Bran as a Feed for Mules

In a 162-day experiment with 18 sugar plantation mules, the following concentrate mixtures were compared

	"Barley" Ration	"Pincapple Bran" Ration
Pineapple bran	28.3%	53.3%
Barley	56.7%	26.7%
Soybean oil cake meal	8.3%	13.3%
Linseed oil cake meal	6.7%	6.7%

The "pineapple bran" ration proved just as satisfactory as the "barley" ration based on maintaining the weight of the mules, general physical condition and endurance, and at prices then prevailing resulted in a feed cost saving of 2.5 cents per pule per day.

Cane tops were fed for roughages over which were poured 4 pounds of cane molasses per mule per day. One mule of each team was fed the "barley" the other the "pineapple bran" concentrate mixture, hence they did exactly the same amount of work.

Fattening Beef Steers on Feeds Produced in Hawaii

Three, good type Aberdeen-Angus steers from Maui were fed a concentrate mixture containing 27 percent of cane molasses and 36.5 percent each of pigeon pea hay meal and corn, cob and husk meal. During the first 61 days of the feeding trial they averaged 2.84 pounds daily gain and

DESTRUCTION OF THE PARTY AND PARTY OF THE PA

District lines on a People of the state of

Description and programme of the state of th

Series	Protect		
30.00			

Letters and the state of the st

The school of the property of the state of the party of the state of t

the state of the popular and the state of the state of

The state of the standard and arranged for a standard the state of the

.

required 7.18 pounds of the concentrate mixture to make a pound of gain.

Rate of gains decreased as the experiment was continued. Two of these steers when slaughtered graded as "good" and one as "choice".

Publications During the Year

For further animal husbandry information, address the University of Hawaii requesting any of the following publications:

Bul. 73 -- Cane Molasses as a Feed for Dairy Cows.

Animal Husbandry Progress Notes -- No. 7 -- Pineapple Bran as a Feed for Mules.

Animal Husbandry Progress Notes -- No. 8 -- Green Panicum Grass vs. Green Sudan
Grass for Dairy Cows.

Animal Husbandry Progress Notes -- No. 9 -- General Report Animal Husbandry

Division -- 1933-34.

Animal Husbandry Progress Notes -- No. 10 -- Fattening Steers on Feeds

Produced in Hawaii.

out of the property of the experiment was presented to almost a possess of the color of the colo

Tool off being smallestifted

And the fourthern and at the rollowing pully actions; the Carlo Control of the Co

and the state of t

Theorem America Transfer - Tol. 2 - Dollar B. Andrew Strategic Lands

abset no species introduced - all out - needs managed properties in the state